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Renewable Energy Consumption and Electricity Preliminary Statistics 2009

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U.S. Energy Information Administration
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Preface

This report, *Renewable Energy Consumption and Electricity Preliminary Statistics 2009*, presents preliminary information on renewable energy consumption and electricity generation and capacity for 2009. Final renewable energy consumption and electricity data will be included as a chapter in the *Renewable Energy Annual 2009* scheduled to be released early in 2011.

The renewable energy resources in the report include: biomass (wood and derived fuels, municipal solid waste (MSW) biogenic, landfill gas, ethanol and biodiesel and other biomass); geothermal; wind; solar/PV (solar thermal and photovoltaic); and hydroelectric conventional. Hydroelectric pumped storage is excluded, because it is usually based on non-renewable energy sources.

Definitions for terms used in this report can be found in EIA's Energy Glossary: http://www.eia.gov/glossary/index.html. General information about all the EIA surveys with data related to renewable energy and referenced in this report can be found at: http://www.eia.gov/oss/forms.html.

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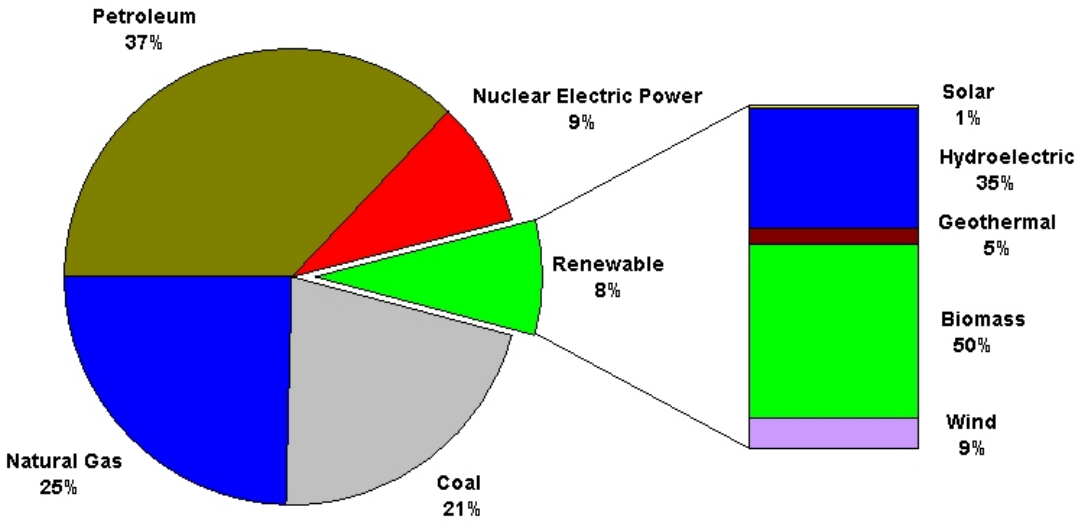
Consumption

In 2009, renewable energy's market share reached 8 percent of total U.S. energy consumption, as total consumption decreased nearly 5 percent while renewable energy consumption rose 5 percent. (Table 1 and Figure 1) Total U.S. energy consumption decreased from 99.4 to 94.8 quadrillion Btu between 2008 and 2009. The largest decreases were for coal – down 2.4 quadrillion Btu and petroleum – down 2.0 quadrillion Btu; these fluctuations were larger than usual and in some measure reflect the slow economy for 2009.

At the same time, total renewable energy consumption rose from 7.4 to 7.7 quadrillion Btu. The largest increases were for biofuels (173 trillion Btu), conventional hydroelectric power (170 trillion Btu), and wind (150 trillion Btu) (Table 2). The largest decrease (153 trillion Btu) was for wood and wood derived fuels, of which 127 trillion Btu was accounted for by the industrial sector (Table 2).

Figure 1 Renewable Energy Consumption in the Nation's Energy Supply, 2009



Source: U.S. Energy Information Administration, Office of Coal, Nuclear, Electric and Alternate Fuels.

Biofuels consumption was up in 2009 compared to 2008, but the gain was not as large as the gain seen between 2007 and 2008 (Table 2). Ethanol consumption (minus denaturant) increased the most by 94 trillion Btu to about 894 trillion Btu. Domestic biodiesel consumption increased from 40 to 44 trillion Btu. Policies affecting the export market changed, so that the advantages of exporting were less favorable.

Ethanol Industry Highlights

The U.S. ethanol industry continued to expand in 2009, but also underwent substantial restructuring due to the difficult economic climate that took hold in 2008. Corn prices in early 2008 rose following Midwestern floods. Corn growers and purchasers expected a small harvest due to the flood damage. Many producers attempted to hedge against a poor harvest by locking in supplies at fairly high prices. Former industry leader Verasun was among the most aggressive. Corn growers recovered from the flooding more strongly than expected. The resulting collapse in corn prices forced Verasun into bankruptcy protection in October 2008, and the firm was subsequently liquidated. The ethanol industry began 2009 barely making a profit. Gasoline prices declined rapidly from historic highs set in the summer of 2008, bringing ethanol prices down with them. The result was a squeeze on industry profitability. Tight credit markets and continuing fluctuations in ethanol, corn, and natural gas prices caused other ethanol producers to enter bankruptcy proceedings in 2009, most notably Pacific Ethanol and Aventine Renewable Energy. These two firms restructured instead of liquidating, however. Ethanol plants located outside the Midwest seemed to be the most vulnerable.

Several major oil refiners took the opportunity to obtain ethanol production capacity for less than replacement cost, currently estimated at $2 per gallon of capacity per year. Valero initially purchased 7 plants from Verasun for $477 million. In December, Valero purchased two more former Verasun plants for $200 million and bid $72 million for a plant from bankrupt Renew Energy. By year's end, Valero had expanded its ethanol production capacity from zero to one billion gallons per year, not including the Renew Energy facility. Sunoco purchased a trouble-prone 100 million-gallon-per-year plant in Volney, New York. The plant cost approximately $200 million to build. Sunoco won the plant at auction with a bid of $8.5 million and is expected to spend $14 million to return the plant to operation. Murphy Oil bought a former Verasun plant in Hankinson, North Dakota for $92 million and is expected to invest another $15 million to restart it.

There were also several significant regulatory developments for the ethanol industry in 2009. California changed its gasoline regulations to allow the ethanol blending level to rise from 5.7 volume percent to 10 volume percent. Petroleum marketers continued to add ethanol capacity in places that have not traditionally used ethanol in their gasoline. The ethanol industry recognized that it will soon be able to produce and distribute enough ethanol to put 10 volume percent in every gallon of gasoline. Gasoline-powered vehicles on the road in the U.S. are generally only warranted to burn gasoline with 10 volume percent ethanol or less. About 1.2 million vehicles are capable of using fuel with up to 85 percent ethanol (E85), but gas stations that sell E85 are rare.[1] E85 infrastructure is being added, but not nearly as quickly as ethanol production is expanding. One solution that has been proposed is to allow higher percentages of ethanol in gasoline. This would allow more ethanol to be distributed through existing infrastructure, helping to meet the requirements of Renewable Fuels Standard 2 (RFS2). It also gives ethanol producers the chance to capture the blending value of ethanol in gasoline, rather than needing to price

[1] See U.S. Energy Information Administration, Alternatives to Traditional Transportation Fuels 2008 (Washington, DC April 2010), table S.1.

strictly on an energy basis, which would be expected if substantial quantities of ethanol are going into E85. Ethanol has approximately two-thirds the energy of gasoline. Despite the lower energy content, ethanol is approximately equal in value to gasoline on a per-gallon basis because it improves octane, dilutes sulfur, and dilutes aromatic content of the final blend. Automakers, however, have concerns that catalytic converters in older cars might fail prematurely due to the higher blends. Growth Energy, an ethanol trade group, petitioned the EPA in March to accept blends with up to 15 percent ethanol as "substantially similar" to gasoline. EPA is expected to make its decision in mid-2010.

EPA unveiled its proposed Renewable Fuels Standard 2 (RFS2) rule in May 2009. (The RFS2 rule was finalized February 2010.) The first Renewable Fuels Standard (RFS1) was enacted as part of the Energy Policy Act of 2005 (EPACT05). The new, larger standard was passed with the Energy Independence and Security Act of 2007 (EISA07). RFS1 required 7.5 billion gallons of renewable motor fuel by 2012, increasing in proportion to motor gasoline consumption thereafter. The proposed RFS2 rule requires 15.2 billion ethanol-gallon-equivalents by 2012 and 36 billion ethanol-gallon-equivalents by 2022. The existing rule has two categories, conventional and cellulosic biofuels. The proposed RFS2 rule has four categories: conventional, advanced, cellulosic, and biomass-based diesel. One gallon of any biofuel other than ethanol is weighted according to its energy content relative to ethanol. For each category of biofuels, a standard is set for reduction in greenhouse gas emissions relative to the particular conventional fuel that is displaced. Ethanol is normally used as a gasoline substitute, so greenhouse gas emissions from a particular ethanol production technology are compared to gasoline. The legislation requires that conventional biofuels, expected to be ethanol from corn, exhibit a 20 percent reduction in life cycle greenhouse gases. Corn ethanol from a modern dry-mill plant meets this standard, taking into account the fossil fuels needed to grow, transport, and distill the corn into ethanol. The energy needed to produce agricultural chemicals used on the corn field is also included. But EISA07 requires an extension of the greenhouse gas analysis to include indirect land use changes. Indirect land use changes include such things as alterations to crop rotations and cultivation of additional land relative to the scenario where biofuel is not produced. The land use changes may have associated greenhouse gas emissions, which would then be attributed to biofuels production. Indirect land use changes resulting from increased corn cultivation decrease but do not eliminate the greenhouse gas benefits of corn ethanol production.

One of the motivations behind California's gasoline formulation change was its new Low Carbon Fuel Standard. California issued regulations implementing the standard in April 2009. It requires fuel providers to reduce the lifecycle carbon emissions of their fuels by an average of 10 percent compared to conventional fuels by 2020. Thirteen States in the Northeast are also trying to develop similar standards. Biofuels are expected to play a major role in meeting the requirements. California also plans to include indirect land use changes in its emission estimates. Domestic corn and Brazilian sugarcane ethanol groups have expressed opposition to the land use components of the emissions models.

Electricity

Renewable energy provided 413 billion kilowatthours of electricity in 2009 out of a U.S. total of 3,953 billion kilowatthours (Table 3).[2] U.S. total net generation declined 4 percent, while renewable generation was up by 8 percent, or 32 billion kilowatthours between 2008 and 2009. Conventional hydroelectric increased by 17 billion kilowatthours. It was up most between the two years in Alabama, California, and Tennessee and down most in Oregon and Washington (Table 5 and Table 6).Wind generation expanded by 15 billion kilowatthours, so that by 2009 it provided 17 percent of total renewable generation, up from 5 percent in 2005. Between 2008 and 2009 the largest increases in wind generation (more than 3 billion kilowatthours each) were in Iowa and Texas.

Renewable electric capacity increased by 9,376 megawatts (MW) to a total of 125,800 MW from 2008 to 2009. Wind provided 95 percent of the increase, but there were smaller contributions from other renewable energy sources including biomass, geothermal and solar. The biggest increase for wind was in Texas (1,814 MW), which put Texas in fourth place after Oregon for the most renewable capacity. Iowa and Washington state each had increases over 900 MW. The largest individual increase in biomass was a new plant in Hawaii. Geothermal added 84 MW capacity all together in California and Nevada, while central station solar expanded by a total of 67 MW and is now found in 10 states outside California.

What factors were affecting this growth? First, the American Recovery and Reinvestment Act, signed into law in February 2009, had a number of provisions for renewable energy development. Among the more important ones intended to expedite the financing of capacity expansion were:

- The extension of the renewable electricity production tax credit (PTC) to the end of 2012 for wind and closed-loop biomass and to the end of 2013 for all other eligible technologies (open-loop biomass, geothermal, landfill gas, municipal solid waste, qualified hydroelectric, marine and hydrokinetic). For 2010, the credit amounted to 2.2 cents/kilowatthour for wind, closed-loop biomass and geothermal energy and 1.1 cents/kilowatthour for the other eligible technologies for the first ten years of the life of the project.
- The expansion of the business energy investment tax credit (ITC) in lieu of the PTC to all taxpayers eligible for the PTC. Generally the credit is worth 30 percent of expenditures and is available to eligible systems in operation by specific due dates, which are as far away as 2016 for some technologies, but just 2012 for wind.
- The availability of a U.S. Treasury grant to eligible PTC technologies in lieu of either the ITC or PTC, for eligible property in service in 2009 or 2010, or placed

[2] U.S. Energy Information Administration, Electric Power Monthly June 2010 (Washington, DC June 2010), table 1.1 and table 1.1a.

in service by the specified credit termination date, if construction began in 2009 or 2010. Combining incentives is not permitted.[3]

In addition, state renewable portfolio standards and mandates, as well as concerns over global climate change and clean air, played a role in supporting renewable expansion.

[3] More details may be found under Federal incentives in DSIRE (Database of State Incentives for Renewables and Electricity) here: http://www.dsireusa.org/incentives/index.cfm?state=us&re=1&EE=1

Table 1 U.S. Energy Consumption by Energy Source, 2005 - 2009

(Quadrillion Btu)

Energy Source[1]	2005	2006	2007	2008	2009
Total	100.468	99.790	101.502	99.438	94.820
Fossil Fuels	85.815	84.687	86.223	83.532	78.631
Coal	22.797	22.447	22.749	22.398	19.996
Coal Coke Net Imports	0.045	0.061	0.025	0.040	-0.023
Natural Gas[2]	22.583	22.224	23.679	23.814	23.416
Petroleum[3]	40.391	39.955	39.769	37.279	35.242
Electricity Net Imports	0.084	0.063	0.106	0.113	0.116
Nuclear Electric Power	8.161	8.215	8.455	8.427	8.328
Renewable Energy	6.407	6.825	6.719	7.367	7.745
Biomass[4]	3.117	3.277	3.503	3.852	3.884
Biofuels	0.577	0.771	0.991	1.372	1.546
Waste	0.403	0.397	0.413	0.436	0.447
Wood and Derived Fuels	2.136	2.109	2.098	2.044	1.891
Geothermal Energy	0.343	0.343	0.349	0.360	0.373
Hydroelectric Conventional	2.703	2.869	2.446	2.512	2.682
Solar Thermal/PV Energy	0.066	0.072	0.081	0.097	0.109
Wind Energy	0.178	0.264	0.341	0.546	0.697

[1]Biodiesel primarily derived from soybean oil and ethanol primarily derived from corn.
[2]Includes supplemental gaseous fuels.
[3]Petroleum products supplied, including natural gas plant liquids and crude oil burned as fuel.
[4]Biomass includes: biofuels, waste (landfill gas, MSW biogenic, and other biomass), wood and wood derived fuels.
PV = Photovoltaic.
Notes: Data revisions are discussed in the Highlights section.
Totals may not equal sum of components due to independent rounding.
Data for 2009 is preliminary.
Sources: Non-renewable energy: U.S. Energy Information Administration (EIA), Monthly Energy Review (MER) March 2010, DOE/EIA-0035 (2010/03) (Washington, DC, March 2010), Tables 1.3, 1.4a and 1.4b; Renewable Energy: Table 2 of this report.

Table 2 Renewable Energy Consumption by Energy Use Sector and Energy Source, 2005 - 2009

(Quadrillion Btu)

Sector and Source	2005	2006	2007	2008	2009
Total	6.407	6.825	6.719	7.367	7.745
Biomass	3.117	3.277	3.503	3.852	3.884
Biofuels	0.577	0.771	0.991	1.372	1.546
Biodiesel[1]	0.012	0.033	0.046	0.040	0.044
Ethanol[2]	0.335	0.453	0.569	0.800	0.894
Losses and Coproducts	0.230	0.285	0.377	0.532	0.607
Biodiesel Feedstock[3]	*	*	0.001	0.001	0.001
Ethanol Feedstock[4]	0.230	0.285	0.376	0.531	0.606
Waste	0.403	0.397	0.413	0.436	0.447
Landfill Gas	0.148	0.157	0.173	0.187	0.204
MSW Biogenic[5]	0.168	0.171	0.165	0.169	0.166
Other Biomass[6]	0.088	0.069	0.075	0.079	0.077
Wood and Derived Fuels[7]	2.136	2.109	2.098	2.044	1.891
Geothermal	0.343	0.343	0.349	0.360	0.373
Hydroelectric Conventional	2.703	2.869	2.446	2.512	2.682
Solar Thermal/PV	0.066	0.072	0.081	0.097	0.109
Wind	0.178	0.264	0.341	0.546	0.697
Residential	0.507	0.475	0.527	0.565	0.563
Biomass	0.430	0.390	0.430	0.450	0.430
Wood and Derived Fuels[8]	0.430	0.390	0.430	0.450	0.430
Geothermal	0.016	0.018	0.022	0.026	0.033
Solar Thermal/PV[9]	0.061	0.067	0.075	0.088	0.101
Commercial	0.119	0.117	0.118	0.125	0.125
Biomass	0.105	0.102	0.102	0.109	0.108
Biofuels	0.001	0.001	0.002	0.002	0.002
Ethanol[2]	0.001	0.001	0.002	0.002	0.002
Waste	0.034	0.036	0.031	0.034	0.034
Landfill Gas	0.003	0.004	0.003	0.003	0.003
MSW Biogenic[5]	0.025	0.026	0.021	0.026	0.025
Other Biomass[6]	0.007	0.007	0.007	0.005	0.006
Wood and Derived Fuels[7]	0.070	0.065	0.069	0.073	0.072
Geothermal	0.014	0.014	0.014	0.015	0.017
Hydroelectric Conventional	0.001	0.001	0.001	0.001	0.001
Solar Thermal/PV	-	-	-	*	*
Industrial	1.873	1.930	1.964	2.053	2.019
Biomass	1.837	1.897	1.944	2.031	1.997
Biofuels	0.237	0.295	0.387	0.544	0.620
Ethanol[2]	0.007	0.010	0.010	0.012	0.013
Losses and Coproducts	0.230	0.285	0.377	0.532	0.607
Biodiesel Feedstock[3]	*	*	0.001	0.001	0.001
Ethanol Feedstock[4]	0.230	0.285	0.376	0.531	0.606
Waste	0.148	0.130	0.144	0.144	0.160
Landfill Gas	0.081	0.081	0.093	0.093	0.113
MSW Biogenic[5]	0.007	0.006	0.006	0.003	0.003
Other Biomass[6]	0.061	0.043	0.046	0.048	0.045
Wood and Derived Fuels[7]	1.452	1.472	1.413	1.344	1.217
Geothermal	0.004	0.004	0.005	0.005	0.004
Hydroelectric Conventional	0.032	0.029	0.016	0.017	0.018
Solar Thermal/PV	-	-	-	-	-
Wind	-	-	-	-	-
Transportation	0.339	0.475	0.603	0.827	0.923
Biomass	0.339	0.475	0.603	0.827	0.923
Biofuels	0.339	0.475	0.603	0.827	0.923
Biodiesel[1]	0.012	0.033	0.046	0.040	0.044
Ethanol[2]	0.328	0.442	0.557	0.786	0.879
Electric Power[10]	3.568	3.827	3.508	3.798	4.113
Biomass	0.406	0.412	0.423	0.435	0.426
Waste	0.221	0.231	0.237	0.258	0.253
Landfill Gas	0.065	0.073	0.077	0.092	0.088
MSW Biogenic[5]	0.136	0.139	0.138	0.141	0.138
Other Biomass[6]	0.020	0.019	0.022	0.026	0.027
Wood and Derived Fuels[7]	0.185	0.182	0.186	0.177	0.173
Geothermal	0.309	0.306	0.308	0.314	0.320
Hydroelectric Conventional	2.670	2.839	2.430	2.495	2.663
Solar Thermal/PV	0.006	0.005	0.006	0.009	0.008
Wind	0.178	0.264	0.341	0.546	0.697

[1]Biodiesel primarily derived from soybean oil.

Table 2 Renewable Energy Consumption by Energy Use Sector and Energy Source, 2005 - 2009 (Quadrillion Btu) (Continued)

Sector and Source	2005	2006	2007	2008	2009

[2]Ethanol primarily derived from corn minus denaturant.
[3]Losses and co-products from the production of biodiesel. Does not include natural gas, electricity, and other non-biomass energy used in the production of biodiesel.
[4]Losses and co-products from the production of fuel ethanol. Does not include natural gas, electricity, and other non-biomass energy used in the production of fuel ethanol.
[5]Includes paper and paper board, wood, food, leather, textiles and yard trimmings.
[6]Agriculture byproducts/crops, sludge waste, and other biomass solids, liquids and gases.
[7]Black liquor, and wood/wood waste solids and liquids.
[8]Wood and wood pellet fuels.
[9]Includes small amounts of distributed solar thermal and photovoltaic energy used in the commercial, industrial and electric power sectors.
[10]The electric power sector comprises electricity-only and combined-heat-power (CHP) plants within North American Classification System (NAICS) 22 category whose primary business is to sell electricity, or electricity and heat, to the public.
MSW = Municipal Solid Waste.
PV = Photovoltaic.
* = Less than 500 billion Btu.
- = No data reported.
Notes: Totals may not equal sum of components due to independent rounding.
Data revisions are discussed in the Highlights section.
Data for 2009 is preliminary.
Energy consumption for the noncombustible renewable energy sources (hydroelectric conventional, solar thermal, PV and wind) used in electricity generation is determined by mulitiplying generation times the fossil fuel equivalent heat rate.
Energy consumption for geothermal energy used in electricity generation is determined by mulitiplying generation times the geothermal heat rate. See EIA, Annual Energy Review (AER) 2008, DOE/EIA-0384 (2008) (Washington, DC, June 2009), Table A6.
Sources: Analysis conducted by U.S. Energy Information Administration, Office of Coal, Nuclear, Electric and Alternate Fuels and specific sources described as follows. Residential: U.S. Energy Information Administration, Form EIA-457A/G, "Residential Energy Consumption Survey;" Oregon Institute of Technology, Geo-Heat Center; and U.S. Energy Information Administration, Form EIA-63-A, "Annual Solar Thermal Collector Manufacturers Survey" and Form EIA-63B, "Annual Photovoltaic Module/Cell Manufacturers Survey." Commercial: U.S. Energy Information Administration, Form EIA-906, "Power Plant Report," Form EIA-920, "Combined Heat and Power Plant Report," and Form EIA-923, "Power Plant Operations Report;" and Oregon Institute of Technology, Geo-Heat Center. Industrial: U.S. Energy Information Administration, Form EIA-846 (A, B, C) "Manufacturing Energy Consumption Survey," Form EIA-906, "Power Plant Report," Form EIA-920, "Combined Heat and Power Plant Report," and Form EIA-923, "Power Plant Operations Report;" and Oregon Institute of Technology, Geo-Heat Center; Government Advisory Associates, Resource Recovery Yearbook and Methane Recovery Yearbook;
U.S. Environmental Protection Agency, Landfill Methane Outreach Program estimates; and losses and coproducts from the production of biodiesel calculated as the difference between energy in feedstocks and production and from the production of ethanol calculated as the difference between energy feedstocks and production less denaturants. Biofuels for Transportation: Biodiesel: Consumption: 2001-2008: Calculated as biodiesel production plus net imports, 2009: January and February: EIA, Petroleum Supply Monthly, Table 1, data for refinery and blender net inputs of renewable fuels except ethanol. March through December: Calculated as biodiesel production plus biodiesel net imports minus biodiesel stock change; Production: 2001-2005: U.S. Department of Agriculture (USDA), Commodity Credit Corporation, Bioenergy Program, 2006: U.S. Department of Commerce, Bureau of Census, Current Industrial Reports, Fats and Oils - Production, Consumption and Stocks, data for soybean oil in methyl esters (biodiesel), 2007and 2009: U.S. Department of Commerce, Bureau of Census, Current Industrial Reports, Fats and Oils - Production, Consumption and Stocks, data for fats and oils in methyl esters, and 2008: U.S. Energy Information Administration, Form EIA-22S, "Supplement to the Monthly Biodiesel Production Survey;" Trade: USDA imports data for Harmonized Tariff Schedule code 3824.90.40.20 (Fatty Esters Animal/ Vegetable Mixture) and exports data for Schedule B code 3824.90.40.00 (Fatty Substances Animal/ Vegetable Mixture, Stock Change: EIA Petroleum Supply Monthly (PSM) various reports. Table 1 data for renewable fuels except ethanol; and Ethanol: 2001-2004: EIA, Petroleum Supply Annual, Tables 2 and 16. Calculated as ten percent of oxygenated finished motor gasoline field production (Table 2) plus fuel ethanol refinery input (Table 16). 2005-2008: EIA Petroleum Supply Annual (Various Issues), Tables 1 and 15.
Calculated as motor gasoline blending components adustments (Table 1), plus finished motor gasoline adjustments (Table 1), plus fuel ethanol refinery and blender net inputs (Table 15). 2009: EIA Petroleum Supply Monthly various reports, Table 1. Calculated as fuel ethanol refinery and blender net inputs minus fuel ethanol adjustments. Small amounts of ethanol consumption are distributed to the commercial and industrial sectors according to those sector`s shares of U.S. motor gasoline supplied. Electric Power: U.S. Energy Information Administration, Form EIA-906, "Power Plant Report," Form EIA-920, "Combined Heat and Power Plant Report," and Form EIA-923, "Power Plant Operations Report."

Table 3 Electricity Net Generation From Renewable Energy by Energy Use Sector and Energy Source, 2005 - 2009

(Thousand Kilowatthours)

Sector/Source	2005	2006	2007	2008	2009
Total	357,650,653	385,771,908	352,747,486	381,043,759	413,246,300
Biomass	54,276,810	54,860,621	55,538,578	55,033,612	54,336,774
Waste	15,420,393	16,098,525	16,524,554	17,733,759	18,093,335
Landfill Gas	5,142,111	5,677,040	6,157,750	7,156,340	7,351,052
MSW Biogenic[1]	8,330,471	8,477,571	8,303,838	8,096,801	8,342,265
Other Biomass[2]	1,947,810	1,943,913	2,062,966	2,480,617	2,400,018
Wood and Derived Fuels[3]	38,856,417	38,762,096	39,014,024	37,299,853	36,243,438
Geothermal	14,691,745	14,568,029	14,637,213	14,951,348	15,209,663
Hydroelectric Conventional	270,321,255	289,246,416	247,509,974	254,831,385	272,130,941
Solar Thermal/PV	550,294	507,706	611,793	864,315	807,988
Wind	17,810,549	26,589,137	34,449,927	55,363,100	70,760,934
Commercial	1,758,789	1,712,691	1,691,439	1,614,986	1,649,375
Biomass	1,672,752	1,619,245	1,614,160	1,554,948	1,580,390
Waste	1,656,755	1,598,646	1,598,799	1,533,645	1,559,715
Landfill Gas	217,632	172,590	202,547	233,636	243,760
MSW Biogenic[1]	953,093	955,910	962,496	910,908	937,642
Other Biomass[2]	486,031	470,146	433,756	389,101	378,313
Wood and Derived Fuels[3]	15,997	20,599	15,361	21,303	20,675
Hydroelectric Conventional	86,037	93,446	77,279	59,957	68,918
Solar Thermal/PV	-	-	-	80	67
Industrial	32,198,528	31,871,511	30,508,807	29,138,172	28,275,184
Biomass	29,003,087	28,972,463	28,918,826	27,462,283	26,415,224
Waste	732,553	572,447	631,452	821,394	757,546
Landfill Gas	113,155	28,786	27,087	21,494	19,186
MSW Biogenic[1]	34,441	34,541	39,782	-	-
Other Biomass[2]	584,957	509,120	564,583	799,900	738,360
Wood and Derived Fuels[3]	28,270,534	28,400,016	28,287,374	26,640,889	25,657,678
Hydroelectric Conventional	3,195,441	2,899,048	1,589,981	1,675,889	1,859,960
Solar Thermal/PV	-	-	-	-	-
Electric Power[4]	323,693,336	352,187,707	320,547,239	350,290,602	383,321,741
Biomass	23,600,971	24,268,913	25,005,592	26,016,380	26,341,160
Waste	13,031,084	13,927,432	14,294,304	15,378,719	15,776,074
Landfill Gas	4,811,325	5,475,664	5,928,117	6,901,211	7,088,106
MSW Biogenic[1]	7,342,938	7,487,120	7,301,560	7,185,893	7,404,623
Other Biomass[2]	876,822	964,648	1,064,627	1,291,615	1,283,345
Wood and Derived Fuels[3]	10,569,886	10,341,481	10,711,288	10,637,661	10,565,085
Geothermal	14,691,745	14,568,029	14,637,213	14,951,348	15,209,663
Hydroelectric Conventional	267,039,777	286,253,922	245,842,714	253,095,539	270,202,064
Solar Thermal/PV	550,294	507,706	611,793	864,235	807,921
Wind	17,810,549	26,589,137	34,449,927	55,363,100	70,760,934

[1]Includes paper and paper board, wood, food, leather, textiles and yard trimmings.
[2]Agriculture byproducts/crops, sludge waste, and other biomass solids, liquids and gases.
[3]Black liquor, and wood/wood waste solids and liquids.
[4]The electric power sector comprises electricity-only and combined-heat-power (CHP) plants within North American Classification System (NAICS) 22 category whose primary business is to sell electricity, or electricity and heat, to the public.
MSW = Municipal Solid Waste.
PV = Photovoltaic.
- = No data reported.
Notes: Totals may not equal sum of components due to independent rounding.
Data revisions are discussed in the Highlights section.
Data for 2009 is preliminary.
Source: Electric Power: U.S. Energy Information Administration, Form EIA-923, "Power Plant Operations Report," and predecessor forms: Form EIA-906, "Power Plant Report," and Form EIA-920, "Combined Heat and Power Plant Report."

Table 4 U.S. Electric Net Summer Capacity, 2005 - 2009

(Megawatts)

Source	2005	2006	2007	2008	2009
Total	978,020	986,215	994,888	1,010,171	1,027,584
Renewable Total	98,746	101,934	107,954	116,423	125,800
Biomass	9,802	10,100	10,839	11,050	11,353
Waste	3,609	3,727	4,134	4,186	4,405
Landfill Gas	887	978	1,319	1,429	1,514
MSW[1]	2,167	2,188	2,218	2,215	2,215
Other Biomass[2]	554	561	598	542	676
Wood and Derived Fuels[3]	6,193	6,372	6,704	6,864	6,948
Geothermal	2,285	2,274	2,214	2,256	2,351
Hydroelectric Conventional	77,541	77,821	77,885	77,930	77,951
Solar Thermal/PV	411	411	502	536	603
Wind	8,706	11,329	16,515	24,651	33,542
Nonrenewable Total	879,274	884,281	886,934	893,747	901,785

[1]Includes total capacity whose primary energy source is MSW.
[2]Agriculture byproducts/crops, sludge waste and other biomass solids, liquids and gases. Does not include tires.
[3]Black liquor, and wood/wood waste solids and liquids.
MSW = Municipal Solid Waste.
PV = Photovoltaic.
Notes: Totals may not equal sum of components due to independent rounding.
Data revisions are discussed in the Highlights section.
Data for 2009 is preliminary.
Source: U.S. Energy Information Administration, Form EIA-860, "Annual Electric Generator Report."

Table 5 Total Renewable Net Generation by Energy Source and State, 2008

(Thousand Kilowatthours)

State	Hydroelectric Conventional	NonHydroelectric							Total
		Biomass			Geothermal	Solar Thermal/PV	Wind	Total	
		Waste		Wood and Derived Fuels[3]					
		Landfill Gas/MSW Biogenic[1]	Other Biomass[2]						
Alabama	6,136,148	-	33,698	3,323,616	-	-	-	3,357,313	9,493,461
Alaska	1,171,801	-	4,682	-	-	-	68	4,750	1,176,551
Arizona	7,285,902	19,050	3,936	75,947	-	14,724	-	113,658	7,399,560
Arkansas	4,660,297	35,751	11,019	1,466,063	-	-	-	1,512,833	6,173,130
California	24,127,810	1,717,046	644,900	3,483,555	12,883,000	670,481	5,384,955	24,783,937	48,911,746
Colorado	2,039,327	8,366	36,753	135	-	18,354	3,220,843	3,284,451	5,323,778
Connecticut	556,177	731,881	-	1,633	-	-	-	733,514	1,289,691
Delaware	-	163,375	-	-	-	-	-	163,375	163,375
District of Columbia	-	-	-	-	-	-	-	-	-
Florida	206,158	1,726,284	607,843	1,968,741	-	-	-	4,302,868	4,509,026
Georgia	2,144,618	31,427	90,258	2,660,285	-	-	-	2,781,970	4,926,588
Hawaii	84,343	184,005	118,418	-	234,333	18	240,023	776,797	861,140
Idaho	9,362,501	-	-	455,393	85,547	-	207,472	748,412	10,110,913
Illinois	138,549	697,186	184	611	-	-	2,336,996	3,034,977	3,173,526
Indiana	436,780	273,038	-	-	-	-	238,356	511,393	948,173
Iowa	819,047	98,298	68,966	49	-	-	4,083,787	4,251,099	5,070,146
Kansas	10,574	-	-	-	-	-	1,759,412	1,759,412	1,769,986
Kentucky	1,917,470	105,094	3,786	350,740	-	-	-	459,619	2,377,089
Louisiana	1,064,373	-	70,886	2,638,789	-	-	-	2,709,675	3,774,048
Maine	4,457,405	205,608	52,187	3,668,569	-	-	131,621	4,057,985	8,515,390
Maryland	1,974,078	414,781	-	197,704	-	-	-	612,485	2,586,563
Massachusetts	1,155,811	1,127,529	1,517	122,580	-	80	3,672	1,255,378	2,411,189
Michigan	1,364,378	738,167	1,370	1,710,423	-	-	141,182	2,591,141	3,955,519
Minnesota	727,061	399,003	372,039	725,220	-	-	4,354,620	5,850,882	6,577,943
Mississippi	-	-	5,051	1,386,275	-	-	-	1,391,326	1,391,326
Missouri	2,046,773	29,899	11,200	1,613	-	-	203,313	246,026	2,292,799
Montana	9,999,557	-	-	110,958	111,371	-	593,138	815,467	10,815,024
Nebraska	346,456	44,559	16,370	-	-	-	214,184	275,113	621,569
Nevada	1,750,620	-	-	-	1,382,820	156,013	-	1,538,833	3,289,453
New Hampshire	1,633,224	155,025	-	1,009,640	-	-	10,319	1,174,984	2,808,208
New Jersey	25,773	878,731	3,004	-	-	2,669	20,885	905,290	931,063
New Mexico	312,288	-	18,885	-	-	-	1,642,787	1,661,672	1,973,960
New York	26,723,131	1,512,860	-	555,097	-	-	1,250,700	3,318,657	30,041,788
North Carolina	3,033,642	101,952	18,530	1,799,930	-	1,801	-	1,922,213	4,955,855
North Dakota	1,252,790	-	12,927	-	-	-	1,693,458	1,706,385	2,959,175
Ohio	386,435	182,666	7,509	418,117	-	-	15,084	623,376	1,009,811
Oklahoma	3,811,273	5,443	164,175	23,006	-	-	2,358,080	2,550,704	6,361,977
Oregon	33,805,024	130,747	-	717,117	-	-	2,575,234	3,423,099	37,228,123
Pennsylvania	2,548,858	1,413,963	2,237	657,976	-	175	729,425	2,803,776	5,352,634
Rhode Island	4,977	158,407	-	-	-	-	-	158,407	163,384
South Carolina	1,123,115	119,759	-	1,696,067	-	-	-	1,815,825	2,938,940
South Dakota	2,993,107	-	1,665	-	-	-	145,136	146,801	3,139,908
Tennessee	5,646,073	27,351	8,549	879,293	-	-	50,117	965,310	6,611,383
Texas	1,039,467	400,779	37,694	975,599	-	-	16,225,022	17,639,094	18,678,562
Utah	668,084	23,685	-	-	254,277	-	23,900	301,862	969,946
Vermont	1,492,904	-	-	415,103	-	-	10,235	425,338	1,918,242
Virginia	1,010,993	761,307	20,865	1,916,288	-	-	-	2,698,460	3,709,452
Washington	77,636,758	155,960	11,921	1,113,073	-	-	3,657,484	4,938,438	82,575,196
West Virginia	1,248,037	-	-	-390	-	-	391,910	391,520	1,639,557
Wisconsin	1,616,142	474,159	17,596	775,040	-	-	487,141	1,753,935	3,370,077
Wyoming	835,275	-	-	-	-	-	962,542	962,542	1,797,817
U.S. Total	**254,831,385**	**15,253,142**	**2,480,617**	**37,299,853**	**14,951,348**	**864,315**	**55,363,100**	**126,212,374**	**381,043,759**

[1]Includes landfill gas and MSW biogenic (paper and paper board, wood, food, leather, textiles and yard trimmings).
[2]Agriculture byproducts/crops, sludge waste, and other biomass solids, liquids and gases.
[3]Black liquor, and wood/wood waste solids and liquids.
MSW = Municipal Solid Waste.
PV = Photovoltaic.
- = No data reported.
Note: Totals may not equal sum of components due to independent rounding.
Source: U.S. Energy Information Administration, Form EIA-923, "Power Plant Operations Report," and predecessor forms: Form EIA-906, "Power Plant Report," and Form EIA-920, "Combined Heat and Power Plant Report."

Table 6 Total Renewable Net Generation by Energy Source and State, 2009

(Thousand Kilowatthours)

State	Hydroelectric Conventional	NonHydroelectric							Total
		Biomass			Geothermal	Solar Thermal/PV	Wind	Total	
		Waste		Wood and Derived Fuels[3]					
		Landfill Gas/MSW Biogenic[1]	Other Biomass[2]						
Alabama	11,753,493	-	17,572	3,273,624	-	-	-	3,291,196	15,044,689
Alaska	1,204,550	-	4,255	-	-	-	3,062	7,317	1,211,868
Arizona	6,348,463	18,355	3,616	137,674	-	13,759	9,555	182,960	6,531,423
Arkansas	4,195,168	36,176	15,227	1,426,907	-	-	-	1,478,310	5,673,478
California	27,707,085	1,776,195	664,207	3,622,229	13,022,836	611,763	5,764,637	25,461,867	53,168,952
Colorado	2,058,215	8,822	36,728	4,978	-	16,530	2,942,133	3,009,191	5,067,406
Connecticut	623,123	751,571	-	2,230	-	-	-	753,801	1,376,924
Delaware	-	138,302	-	-	-	-	-	138,302	138,302
District of Columbia	-	-	-	-	-	-	-	-	-
Florida	244,526	1,808,137	538,905	1,890,723	-	10,225	-	4,247,989	4,492,515
Georgia	3,055,512	32,087	75,535	2,823,680	-	-	-	2,931,302	5,986,814
Hawaii	92,855	180,067	114,606	-	167,591	25	213,224	675,513	768,368
Idaho	9,506,510	-	-	477,948	107,079	-	227,028	812,055	10,318,565
Illinois	161,280	752,094	247	461	-	-	2,761,152	3,513,953	3,675,233
Indiana	520,261	263,428	-	-	-	-	1,403,192	1,666,620	2,186,880
Iowa	737,337	94,069	80,028	1,161	-	-	7,331,391	7,506,649	8,243,986
Kansas	12,366	-	-	-	-	-	2,385,107	2,385,107	2,397,473
Kentucky	3,353,205	106,189	4,481	269,794	-	-	-	380,464	3,733,669
Louisiana	1,236,351	-	75,281	2,418,110	-	-	-	2,493,390	3,729,741
Maine	4,588,721	234,099	40,420	3,363,276	-	-	260,121	3,897,916	8,486,637
Maryland	1,948,148	383,692	-	156,290	-	-	-	539,982	2,488,130
Massachusetts	1,276,194	1,141,755	777	116,887	-	67	3,798	1,263,284	2,539,478
Michigan	1,320,648	797,773	6,260	1,446,122	-	-	289,188	2,539,343	3,859,992
Minnesota	695,633	432,510	381,286	729,821	-	-	4,956,987	6,500,604	7,196,236
Mississippi	-	-	3,713	1,393,405	-	-	-	1,397,118	1,397,118
Missouri	1,914,728	29,327	26,020	1,510	-	-	498,515	555,372	2,470,100
Montana	9,141,899	-	-	100,425	-	-	810,815	911,240	10,053,139
Nebraska	401,434	45,045	15,118	-	-	-	288,681	348,844	750,278
Nevada	2,446,365	-	-	890	1,616,677	150,858	-	1,768,426	4,214,791
New Hampshire	1,580,928	169,887	-	919,736	-	-	28,466	1,118,088	2,699,016
New Jersey	37,117	912,335	2,194	-	-	2,438	19,150	936,117	973,234
New Mexico	300,873	-	17,433	-	-	-	1,543,715	1,561,148	1,862,021
New York	28,317,958	1,534,337	-	546,727	-	-	2,258,904	4,339,969	32,657,927
North Carolina	4,921,505	112,375	6,403	1,901,180	-	2,322	-	2,022,280	6,943,785
North Dakota	1,475,251	-	8,453	-	-	-	2,756,289	2,764,742	4,239,993
Ohio	498,109	185,465	7,356	406,882	-	-	15,474	615,177	1,113,286
Oklahoma	3,762,026	6,716	164,154	21,515	-	-	2,271,590	2,463,975	6,226,001
Oregon	32,717,791	135,997	-	615,008	-	-	3,372,284	4,123,288	36,841,080
Pennsylvania	2,820,836	1,465,561	3,479	673,977	-	-	921,137	3,064,154	5,884,990
Rhode Island	6,135	152,776	-	-	-	-	-	152,776	158,911
South Carolina	2,102,247	122,843	-	1,610,717	-	-	-	1,733,561	3,835,807
South Dakota	4,319,205	-	5,775	-	-	-	392,308	398,083	4,717,288
Tennessee	9,482,290	28,507	6,927	860,997	-	-	51,747	948,178	10,430,468
Texas	1,501,345	414,172	30,950	937,621	16,360	-	19,350,879	20,749,982	22,251,327
Utah	696,991	29,266	-	-	279,121	-	64,497	372,884	1,069,876
Vermont	1,663,593	-	-	373,143	-	-	11,589	384,732	2,048,325
Virginia	1,414,565	743,462	14,508	1,707,769	-	-	-	2,465,738	3,880,303
Washington	73,932,815	161,379	10,657	1,265,015	-	-	3,538,936	4,975,987	78,908,802
West Virginia	1,576,275	-	-149	-689	-	-	742,439	741,602	2,317,877
Wisconsin	1,605,407	488,545	17,596	745,695	-	-	1,059,126	2,310,963	3,916,370
Wyoming	853,609	-	-	-	-	-	2,213,820	2,213,820	3,067,428
U.S. Total	**272,130,941**	**15,693,318**	**2,400,018**	**36,243,438**	**15,209,663**	**807,988**	**70,760,934**	**141,115,359**	**413,246,300**

[1]Includes landfill gas and MSW biogenic (paper and paper board, wood, food, leather, textiles and yard trimmings).
[2]Agriculture byproducts/crops, sludge waste, and other biomass solids, liquids and gases.
[3]Black liquor, and wood/wood waste solids and liquids.
MSW = Municipal Solid Waste.
PV = Photovoltaic.
- = No data reported.
Notes: Totals may not equal sum of components due to independent rounding.
Data for 2009 is preliminary.
Source: U.S. Energy Information Administration, Form EIA-923, "Power Plant Operations Report."

Table 7 Total Renewable Net Summer Capacity by Energy Source and State, 2008

(Megawatts)

State	Hydroelectric Conventional	NonHydroelectric							Total
		Biomass			Geothermal	Solar Thermal/PV	Wind	Total	
		Waste		Wood and Derived Fuels[3]					
		Landfill Gas/MSW[1]	Other Biomass[2]						
Alabama	3,272	-	-	593	-	-	-	593	3,865
Alaska	400	-	-	-	-	-	3	3	403
Arizona	2,720	4	-	29	-	9	-	42	2,762
Arkansas	1,321	5	5	312	-	-	-	322	1,643
California	10,122	374	109	616	1,940	416	2,368	5,822	15,945
Colorado	666	3	10	-	-	11	1,063	1,087	1,753
Connecticut	122	166	-	-	-	-	-	166	287
Delaware	-	7	-	-	-	-	-	7	7
District of Columbia	-	-	-	-	-	-	-	-	-
Florida	55	470	171	351	-	-	-	992	1,046
Georgia	2,041	10	-	591	-	-	-	601	2,642
Hawaii	24	60	49	-	31	1	64	205	228
Idaho	2,346	-	-	63	10	-	117	189	2,535
Illinois	34	150	-	-	-	-	962	1,112	1,145
Indiana	60	39	-	-	-	-	131	170	229
Iowa	142	11	3	-	-	-	2,635	2,650	2,791
Kansas	3	-	-	-	-	-	812	812	815
Kentucky	824	15	-	47	-	-	-	63	886
Louisiana	192	-	14	380	-	-	-	394	586
Maine	730	53	36	612	-	-	47	748	1,478
Maryland	590	132	-	3	-	-	-	135	725
Massachusetts	258	263	9	26	-	s	2	299	557
Michigan	250	169	-	230	-	-	124	523	773
Minnesota	194	130	55	170	-	-	1,460	1,815	2,008
Mississippi	-	-	-	229	-	-	-	229	229
Missouri	566	5	-	-	-	-	163	168	734
Montana	2,660	-	-	17	28	-	255	300	2,960
Nebraska	278	6	5	-	-	-	25	35	313
Nevada	1,051	-	-	-	215	89	-	304	1,355
New Hampshire	500	29	-	140	-	-	24	193	694
New Jersey	4	184	20	-	-	4	8	215	219
New Mexico	82	-	6	-	-	-	496	502	584
New York	4,299	340	-	87	-	-	707	1,134	5,433
North Carolina	1,952	20	-	318	-	3	-	342	2,294
North Dakota	486	-	10	-	-	-	776	786	1,272
Ohio	101	41	-	65	-	-	7	113	214
Oklahoma	851	16	-	63	-	-	708	786	1,637
Oregon	8,364	20	3	230	-	-	1,059	1,312	9,676
Pennsylvania	751	397	-	108	-	2	361	868	1,619
Rhode Island	3	24	-	-	-	-	-	24	26
South Carolina	1,337	35	-	220	-	-	-	256	1,592
South Dakota	1,463	-	-	-	-	-	193	193	1,656
Tennessee	2,639	8	2	165	-	-	29	203	2,842
Texas	673	73	29	180	-	-	7,427	7,708	8,380
Utah	256	5	-	-	34	-	19	57	313
Vermont	322	3	-	76	-	-	5	84	406
Virginia	677	269	-	422	-	-	-	691	1,368
Washington	21,203	36	-	314	-	1	1,365	1,716	22,919
West Virginia	264	-	-	-	-	-	330	330	594
Wisconsin	485	72	8	208	-	-	231	518	1,003
Wyoming	303	-	-	-	-	-	680	680	983
U.S. Total	**77,930**	**3,644**	**542**	**6,864**	**2,256**	**536**	**24,651**	**38,493**	**116,423**

[1]Total capacity whose primary energy source is landfill gas or MSW.
[2]Agriculture byproducts/crops, sludge waste, and other biomass solids, liquids and gases.
[3]Black liquor, and wood/wood waste solids and liquids.
MSW = Municipal Solid Waste.
PV = Photovoltaic.
s = Less than 500 kilowatts.
- = No data reported.
Note: Totals may not equal sum of components due to independent rounding.
Source: U.S. Energy Information Administration, Form EIA-860, "Annual Electric Generator Report."

Table 8 Total Renewable Net Summer Capacity by Energy Source and State, 2009

(Megawatts)

State	Hydroelectric Conventional	NonHydroelectric							Total
		Biomass			Geothermal	Solar Thermal/PV	Wind	Total	
		Waste		Wood and Derived Fuels[3]					
		Landfill Gas/MSW[1]	Other Biomass[2]						
Alabama	3,272	-	-	593	-	-	-	593	3,865
Alaska	414	-	-	-	-	-	3	3	417
Arizona	2,720	4	-	29	-	11	63	106	2,826
Arkansas	1,321	5	5	312	-	-	-	322	1,643
California	10,119	380	111	645	2,004	446	2,638	6,224	16,343
Colorado	666	3	10	-	-	14	1,063	1,091	1,757
Connecticut	122	166	-	-	-	-	-	166	287
Delaware	-	7	-	-	-	-	-	7	7
District of Columbia	-	-	-	-	-	-	-	-	-
Florida	55	473	171	351	-	25	-	1,020	1,074
Georgia	2,041	15	-	591	-	-	-	606	2,647
Hawaii	24	60	162	-	31	1	64	318	341
Idaho	2,346	-	-	63	10	-	146	219	2,565
Illinois	34	150	-	-	-	-	1,376	1,526	1,559
Indiana	60	41	-	-	-	-	837	877	937
Iowa	142	11	3	-	-	-	3,546	3,561	3,702
Kansas	3	-	-	-	-	-	1,011	1,011	1,014
Kentucky	824	17	-	47	-	-	-	64	888
Louisiana	192	-	14	380	-	-	-	394	586
Maine	730	57	36	612	-	-	107	811	1,541
Maryland	590	135	-	3	-	-	-	137	727
Massachusetts	258	264	9	26	-	s	2	301	559
Michigan	250	175	-	230	-	-	143	548	798
Minnesota	194	130	55	170	-	-	1,610	1,965	2,158
Mississippi	-	-	-	229	-	-	-	229	229
Missouri	566	8	-	-	-	-	307	314	880
Montana	2,660	-	-	17	28	-	355	400	3,060
Nebraska	278	6	5	-	-	-	106	117	395
Nevada	1,051	-	-	-	245	89	-	334	1,386
New Hampshire	500	29	-	140	-	-	24	193	694
New Jersey	4	184	20	-	-	11	8	222	226
New Mexico	82	-	6	-	-	-	596	602	684
New York	4,307	344	-	87	-	-	1,274	1,704	6,011
North Carolina	1,952	20	-	318	-	4	-	343	2,295
North Dakota	486	-	10	-	-	-	1,259	1,269	1,755
Ohio	101	41	-	65	-	-	7	113	214
Oklahoma	851	16	-	63	-	-	930	1,008	1,859
Oregon	8,364	26	3	230	-	-	1,572	1,831	10,195
Pennsylvania	751	419	-	108	-	2	696	1,224	1,975
Rhode Island	3	24	-	-	-	-	-	24	26
South Carolina	1,337	35	-	220	-	-	-	256	1,592
South Dakota	1,463	-	-	-	-	-	320	320	1,783
Tennessee	2,639	8	2	165	-	-	29	203	2,842
Texas	673	79	45	180	-	-	9,241	9,544	10,216
Utah	256	9	-	-	34	-	222	265	521
Vermont	322	3	-	76	-	-	5	84	406
Virginia	677	278	-	422	-	-	-	700	1,377
Washington	21,203	36	-	369	-	1	2,268	2,673	23,876
West Virginia	264	-	-	-	-	-	330	330	594
Wisconsin	485	72	11	208	-	-	285	575	1,060
Wyoming	304	-	-	-	-	-	1,104	1,104	1,408
U.S. Total	**77,951**	**3,729**	**676**	**6,948**	**2,351**	**603**	**33,542**	**47,849**	**125,800**

[1]Total capacity whose primary energy source is landfill gas or MSW.
[2]Agriculture byproducts/crops, sludge waste, and other biomass solids, liquids and gases.
[3]Black liquor, and wood/wood waste solids and liquids.
MSW = Municipal Solid Waste.
PV = Photovoltaic.
s = Less than 500 kilowatts.
- = No data reported.
Notes: Totals may not equal sum of components due to independent rounding.
Data for 2009 is preliminary.
Source: U.S. Energy Information Administration, Form EIA-860, "Annual Electric Generator Report."